

The opinion in support of the decision being entered today was not written for publication and is not binding precedent of the Board.

Paper No. 21

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte HIROTAKA MAKINO
and HAJIME OKADA

Appeal No. 2002-1876
Application 09/358,158¹

HEARD: March 13, 2003

Before KRASS, JERRY SMITH, and BARRETT, Administrative Patent Judges.

BARRETT, Administrative Patent Judge.

DECISION ON APPEAL

This is a decision on appeal under 35 U.S.C. § 134 from the final rejection of claims 1-5, 7, and 8. Claim 6 has been canceled.

We affirm.

¹ Application for patent filed July 20, 1999, entitled "Connector," which claims the foreign filing priority benefit under 35 U.S.C. § 119 of Japanese Application 10-205036, filed July 21, 1998.

BACKGROUND

The invention relates to a connector having a housing and a retainer insertable in a cavity in the housing for retaining terminal fittings in the housing. The retainer has locking arms and protrusions that define a partial locking position which permits the insertion and withdrawal of the terminal fittings and a full locking position which prevents withdrawal of the terminal fittings. The problem in the prior art is that the retainer may be pushed straight through the partial locking position to the full locking position. In this case, a tool is required to pull back the retainer, requiring extra time and labor. The invention uses a partial locking arm that is thinner than the full locking arm so that it takes more force to push the retainer to the full locking position than the partial locking position.

Claim 1, the sole independent claim, is reproduced below.

1. A connector, comprising:

a housing with at least one cavity for at least partly accommodating at least one terminal fitting to be inserted through a rear end portion of the housing, and a retainer insertion portion extending into the housing and communicating with the cavity,

a retainer which is partly insertable into the cavities through the retainer insertion portion, the retainer being movable selectively between a partial locking position where the retainer permits the insertion and withdrawal of the terminal fitting, and a full locking position where the retainer substantially engages the terminal fitting inserted in the cavity to prevent the movement thereof in a withdrawing direction,

at least one partial locking arm and at least one full locking arm being formed on the retainer, the partial and full locking arms being of substantially equal lengths and being spaced from one another by a clearance that is substantially free of structural restraints such that each said locking arm can deflect through the clearance toward the other of the locking arms, and locking steps being formed on inner walls of the retainer insertion portion for the partial and full locking arms to hold the retainer in the partial locking position and in the full locking position, respectively, and

wherein at least one of the width and thickness of the partial locking arms is set smaller than that of the full locking arms to thereby set the elastic forces of the partial locking arms smaller than those of the full locking arms.

The examiner relies on the following references:

Atsumi et al. (Atsumi '565)	5,437,565	August 1, 1995
Atsumi (Atsumi '552) ²	6,036,552	March 14, 2000
		(filed August 12, 1998)

Claims 1-5, 7, and 8 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Atsumi '565 and Atsumi '552.

We refer to the final rejection (Paper No. 9) and the examiner's answer (Paper No. 15) for a statement of the examiner's rejection, and to the brief (Paper No. 13) (pages

² Atsumi '552 is not itself prior art because the present application claims priority of a Japanese application filed July 21, 1998, and Atsumi '552 was filed in the United States on August 12, 1998. The examiner relies on the depiction of prior art in Figs. 9-11 of Atsumi '552. "The Assignee has looked into this matter and has concluded that the structure depicted as prior art in FIGS. 9-11 of Atsumi does qualify as prior art to the claims on appeal herein." (Brief, p. 4.) Thus, Figs. 9-11 of Atsumi '552 are admitted prior art. Further evidence for this is discussed in the opinion.

referred to as "Br__") and reply brief (Paper No. 16) (pages referred to as "RBr__") for a statement of appellants' arguments thereagainst.

OPINION

Grouping of claims

The claims are grouped to stand or fall together (Br3).

Factual findings

The level of ordinary skill in the art is evidenced by the references. See In re Oelrich, 579 F.2d 86, 91, 198 USPQ 210, 214 (CCPA 1978) ("the PTO usually must evaluate both the scope and content of the prior art and the level of ordinary skill solely on the cold words of the literature"); In re GPAC Inc., 57 F.3d 1573, 1579, 35 USPQ2d 1116, 1121 (Fed. Cir. 1995) (the Board did not err in adopting the approach that the level of skill in the art was best determined by the references of record); Okajima v. Bourdeau, 261 F.3d 1350, 1355, 59 USPQ2d 1795, 1797 (Fed. Cir. 2001) ("[T]he absence of specific findings on the level of skill in the art does not give rise to reversible error 'where the prior art itself reflects an appropriate level and a need for testimony is not shown.'").

Atsumi '565, Figs. 1-3, discloses the connector of claim 1 except for the limitation, "wherein at least one of the width and thickness of the partial locking arms is set smaller than that of

the full locking arms to thereby set the elastic forces of the partial locking arms smaller than those of the full locking arms." The partial locking arm and the full locking arm have identical length and identical cross sectional dimensions. Atsumi '565 discusses the problem in the prior art that if the retainer in the provisionally-retained (partial locking) position is accidentally urged into the completely-retained (full locking) position, the terminal cannot be inserted and a tool must be used to release engagement with the completely-retained position, which release operation is inefficient (Background of the Invention, col. 1, lines 26-44). Atsumi '565's solution to the problem is not relevant to this appeal.

The prior art Figs. 9-11 of Atsumi '552 is stated to be from Japanese Laid-Open Publication 04-127976 (col. 1, lines 7-8). Counsel for appellants indicated at oral hearing that the number of this document is in error and that they were not able to obtain a copy of the document. We did our own search, varying one number at a time (assuming the number was off in only one place) (i.e., substituting 01-10 for 04 in the year position; 0 and 2 for the 1 position; and 0-9 for each of the other positions for a total of 56 alternative documents) and likewise were not able to find a corresponding document showing a connector. We then ordered the Atsumi '552 file and verified that the number is correctly printed. However, in the

Atsumi '552 patent file we found a copy of Okada, U.S. Patent 5,252,096, issued October 12, 1993, assigned to the present assignee (copy attached), which shows similar figures at Figs. 4 and 6. This confirms that Fig. 9 of Atsumi '552 is prior art.

Figure 9 of Atsumi '552 (and Figs. 4 and 6 of Okada) clearly shows, but does not describe, the locking arm 5A being longer and thinner than locking arm 5B. We find that one of ordinary skill in the connector art would readily discern that locking arm 5A in Atsumi '552 is a partial locking arm and locking arm 5B is a full locking arm. (This is expressly taught in Okada, but Okada is not relied on.) Atsumi '552 (and Okada) does not describe the purpose of the locking arms having different dimensions.

Obviousness

Figure 9 of Atsumi '552 teaches one of ordinary skill in the art to make the partial locking arm 5A thinner than the full locking arm 5B. This would have suggested to one of ordinary skill in the art to make the partial locking arm in Atsumi '565 thinner than the full locking arm, which produces the claimed invention. Claim 1 does not recite that the structure overcomes the problem of inadvertent over-insertion. It is sufficient that the collective teachings of the references would have suggested doing what appellant has done: making the partial locking arm thinner than the full locking arm. See In re Keller,

642 F.2d 413, 425, 208 USPQ 871, 881-82 (CCPA 1981) ("The question is whether it would have been obvious to one of ordinary skill in the art, working with the ... [prior art] references before him, to do what the inventors herein have done"). The prior art need not suggest solving the same problem set forth by Appellant. See In re Dillon, 919 F.2d 688, 693, 16 USPQ2d 1897, 1901 (Fed. Cir. 1990) (in banc) (overruling in part In re Wright, 848 F.2d 1216, 6 USPQ2d 1959 (Fed. Cir. 1988)). Nor do we think it is necessary that the prior art expressly describe what problem is overcome by, or the reason for, the structure shown in the drawings. The drawings teach what they teach. Nevertheless, although not essential to the rejection, we believe that one of ordinary skill in the art had sufficient skill to appreciate that the thinner partial locking arm in Atsumi '552 requires less force to push the retainer to the partial locking position than to the full locking position.

Appellants argue that neither Atsumi '565 nor Figs. 9-11 of Atsumi '552 recognizes the problem recognized by appellants of inadvertent over-insertion of the retainer beyond the partial locking position and to the full locking position and that without recognition of this potential problem, the skilled artisan simply would not have sought to modify the Atsumi '565 retainer to produce the claimed invention (Br6).

We disagree both with the assertion that Atsumi '565 does not recognize the problem of inadvertent over-insertion and the argument that without recognition of the problem there would have been no reason to modify Atsumi '565. Atsumi '565 discusses the problem of a retainer inserted to a partial locking position (which Atsumi '565 refers to as a "provisionally-retained condition") being accidentally urged to a full locking position (which Atsumi '565 refers to as a "completely-retained position") by an external force before the terminal insertion step (col. 1, lines 26-44). This is inadvertent over-insertion even though it does not take place at the time the retainer is first inserted into the housing. Moreover, as noted in the description of the related art (specification, page 2, first paragraph), this appears to have been a known prior art problem. Nevertheless, it is not required that the problem be disclosed in Atsumi '565 and, in fact, the rejection does not depend on the proposed combination being made to solve a particular problem. It is sufficient that the collective teachings of the references would have suggested doing what appellant has done: making the partial locking arm thinner than the full locking arm. See Keller, 642 F.2d at 425, 208 USPQ at 881-82. Claim 1 does not recite that the structure overcomes the problem of inadvertent over-insertion.

Appellants argue that even if, hypothetically, one skilled in the art were aware of the problem recognized by appellants and looked to the prior art for solutions to that problem, nothing in Figs. 9-11 of Atsumi '552 would lead to the solution defined by the claims on appeal (Br6-7). It is argued that the long locking arm with long locking step and short locking arm with short locking step of Atsumi '552 would result in significant inertia as the retainer is moved towards the partial locking position which increases the likelihood of an inadvertent premature insertion of the retainer beyond the partial locking position (Br7; RBr2-3).

The rejection is based on making the partial locking arm of Atsumi '565 thinner than the full locking arm in view of Atsumi '552, not incorporating the longer locking step of Atsumi '552 (although claim 1 does not define specific locking step structure and does not preclude using the long locking step of Atsumi '552). Furthermore, claim 1 only requires a structure where the partial locking arm is thinner in width and/or thickness than the full locking arm and Fig. 9 of Atsumi '552 discloses this structure. Assuming, arguendo, that the retainer in Atsumi '552 would have a greater tendency to go past the partial locking position, appellants have not pointed out what limitations in claim 1 are not met.

Appeal No. 2002-1876
Application 09/358,158

For the reasons stated above, we conclude that the teachings of the references are sufficient to establish a prima facie case of obviousness, which has been rebutted. The rejection of claims 1-5, 7, and 8 is sustained.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 CFR § 1.136(a).

AFFIRMED

ERROL A. KRASS)	
Administrative Patent Judge)	
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JERRY SMITH)	BOARD OF PATENT
Administrative Patent Judge)	APPEALS
)	AND
)	INTERFERENCES
)	
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LEE E. BARRETT)	
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Appeal No. 2002-1876
Application 09/358,158

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